

Supplementary Figures and Tables

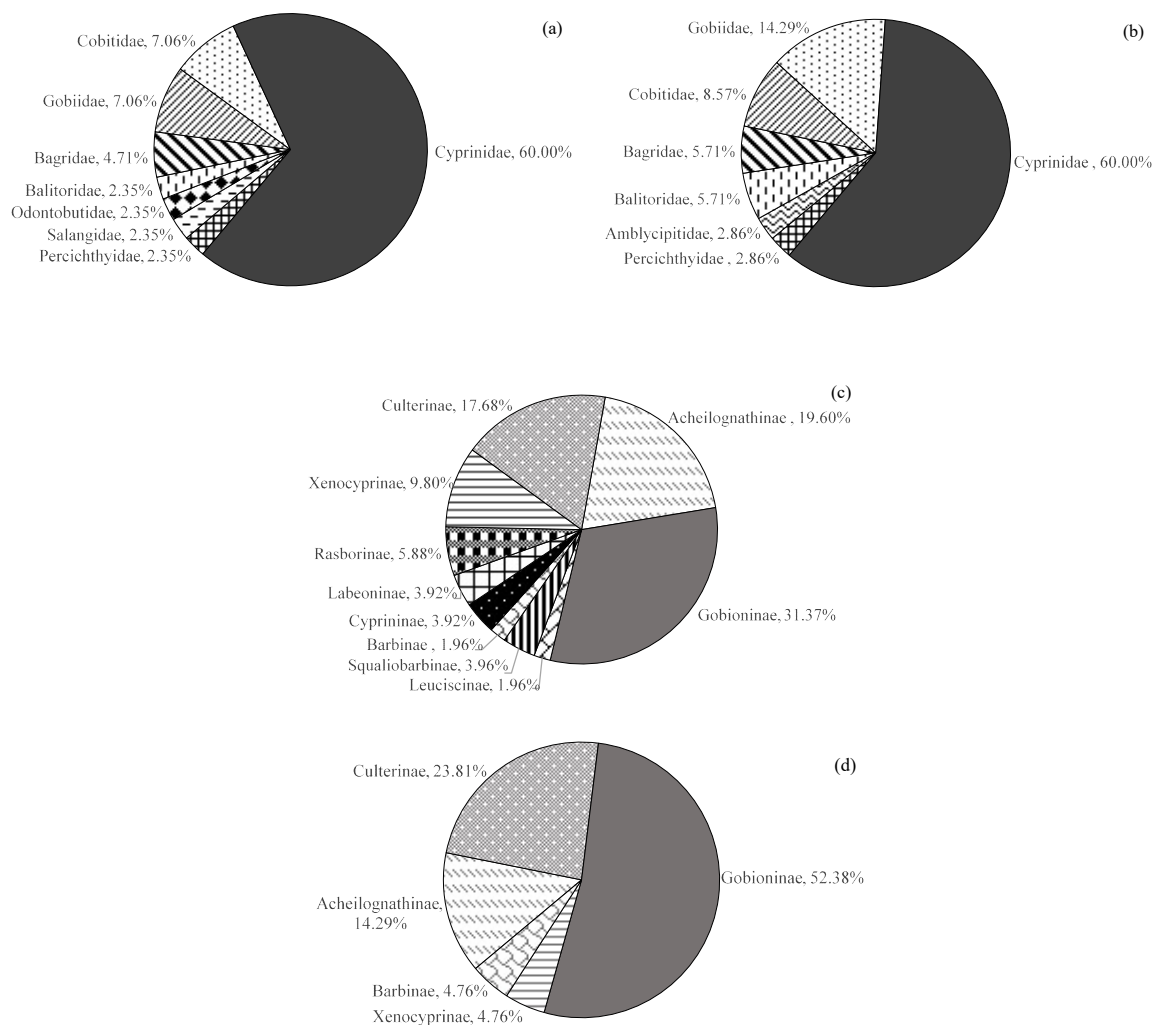


Figure S1. Fish species composition in the East Tiaoxi River. (a) percentage of species number of the most species-rich families to the total species; (b) percentage of endemic species number of the most endemic species-rich families; (c) percentage of species number of each sub-family to the total of Cyprinidae; (d) percentage of endemic species number of each sub-family to the total of Cyprinidae.

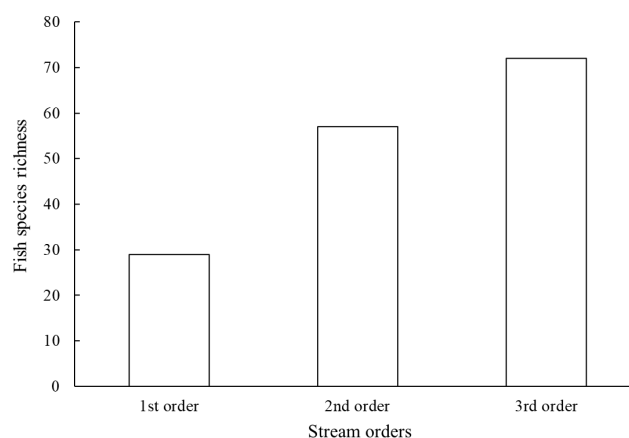
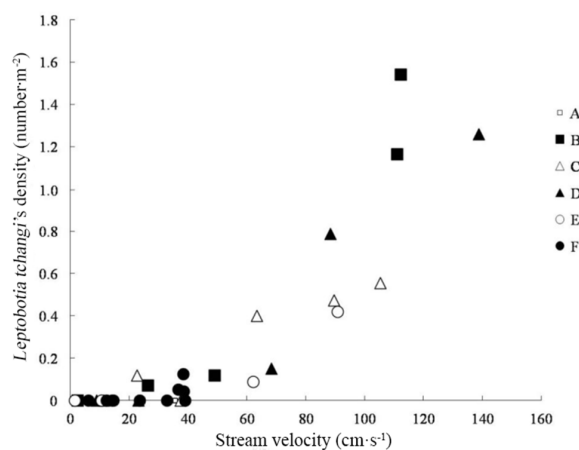
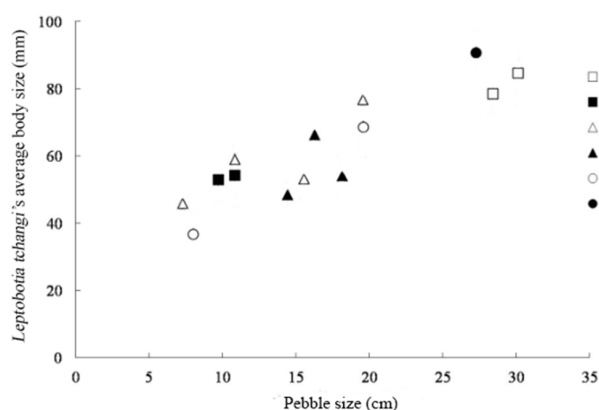
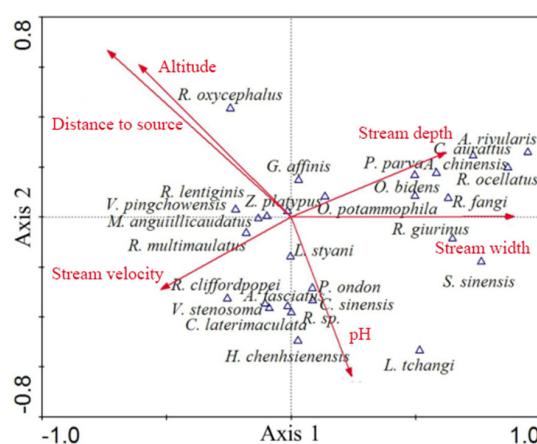


Figure S2. Fish species richness in each stream order of the East Tiaoxi River.**Figure S3.** The relation between *Leptobotia tchangii*'s density and stream velocity at different sampling sites.**Figure S4.** The relation between *Leptobotia tchangii*'s body size and pebble size at different sampling sites.**Figure S5.** Canonical Correspondence Analysis (CCA) of environmental factors and fish assemblage. The length of an environmental vector reflects correlation strength, and the direction shows its relationship with the fish species.

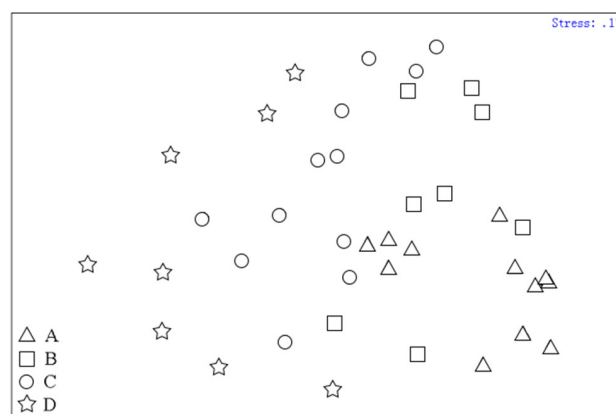


Figure S6. Impacts of anthropogenic activities to non-parametric multidimensional scaling (NMDS) ordination of fish assemblages. A: residential area; B: residential area & revetment; C: residential area, revetment & farmland; D: residential area, revetment, farmland & factory.

Table S1. The list of fish species and their distribution in the East Tiaoxi River.

Scientific name	Distribution				
	NTR	MTR	STR	METR	LETR
Clupeiformes					
Engraulidae					
<i>Coilia nasus</i>					+
Cypriniformes					
Balitoridae					
<i>Vanmanenia pingchowensis</i> ^a	+	+	+		
<i>Vanmanenia stenosoma</i> ^a	+	+	+		
Cobitidae					
<i>Cobitis dolichorhynchus</i> ^a	+	+	+		
<i>Cobitis sinensis</i>	+	+	+	+	
<i>Leptobotia tchangii</i> ^{a,b}	+	+	+		
<i>Misgurnus anguillicaudatus</i>	+		+	+	
<i>Nivwaella laterimaculata</i> ^{a,b}	+	+	+		
<i>Paramisgurnus dabryanus</i>					+
Cyprinidae					
<i>Abbottina rivularis</i>	+	+	+	+	

Scientific name	Distribution				
	NTR	MTR	STR	METR	LETR
<i>Acheilognathus barbatulus</i>	+				
<i>Acheilognathus chankaensis</i>				+	
<i>Acheilognathus gracilis</i> ^{a,b}	+	+		+	
<i>Acheilognathus imberbis</i> ^a	+	+		+	
<i>Acheilognathus macropterus</i>	+	+		+	+
<i>Acheilognathus tonkinensis</i>	+	+		+	+
<i>Acrossocheilus fasciatus</i> ^a	+	+	+		
<i>Aphyocypris chinensis</i>	+				
<i>Carassius auratus</i>	+	+	+	+	+
<i>Chanodichthys dabryi</i>	+	+		+	+
<i>Chanodichthys erythropterus</i>				+	+
<i>Chanodichthys mongolicus</i>		+			
<i>Ctenopharyngodon idellus</i>				+	
<i>Cirrhinus cirrhosus</i>					+
<i>Cirrhinus molitorella</i>				+	
<i>Culter alburnus</i>					+
<i>Cyprinus carpio</i> Linnaeus		+		+	+
<i>Gnathopogon imberbis</i> ^a		+			
<i>Hemibarbus maculatus</i>					+
<i>Hemiculter lucidus</i>				+	+
<i>Hemiculter leucisculus</i>	+	+		+	+
<i>Hemiculterella wui</i> ^a		+			
<i>Huigobio chenhshienensis</i> ^a	+	+	+		
<i>Hypophthalmichthys molitrix</i>				+	
<i>Hypophthalmichthys nobilis</i>				+	

Scientific name	Distribution				
	NTR	MTR	STR	METR	LETR
<i>Megalobrama amblycephala</i> ^{a,b}					+
<i>Microphysogobio fukiensis</i> ^a	+	+		+	
<i>Microphysogobio kiatingensis</i> ^a		+	+		
<i>Mylopharyngodon piceus</i>				+	
<i>Opsariichthys bidens</i>	+	+	+	+	
<i>Paracanthobrama guichenoti</i> ^a					+
<i>Pseudobrama simoni</i> ^a		+		+	+
<i>Pseudorasbora parva</i>	+	+	+	+	+
<i>Rhodeus fangi</i> ^a	+	+	+	+	
<i>Rhodeus ocellatus</i>	+	+	+	+	
<i>Rhodeus sinensis</i> ^a	+	+	+	+	+
<i>Rhynchocypris oxycephalus</i>	+	+	+		
<i>Sarcocheilichthys kiangsiensis</i> ^a	+	+		+	
<i>Sarcocheilichthys nigripinnis</i> ^a	+	+		+	
<i>Sarcocheilichthys parvus</i> ^a	+	+			
<i>Sarcocheilichthys sinensis</i>		+		+	
<i>Saurogobio dabryi</i> Bleeker				+	
<i>Saurogobio gymnocheilus</i>				+	
<i>Sinibrama wui</i> ^a				+	
<i>Squalidus argentatus</i> ^a	+	+	+	+	
<i>Squalidus wolterstorffi</i> ^a	+	+			
<i>Tanakia himantegus</i> ^a	+	+		+	
<i>Xenocypris argentea</i>				+	+
<i>Xenocypris microlepis</i>		+		+	+
<i>Zacco platypus</i>	+	+	+		

Scientific name	Distribution				
	NTR	MTR	STR	METR	LETR
Siluriformes					
Amblycipitidae					
<i>Liobagrus styani</i> ^{a,b}	+	+	+		
Bagridae					
<i>Pseudobagrus ondon</i> ^{1930a}	+	+	+		
<i>Pseudobagrus tenuis</i> ^a	+				+
<i>Tachysurus fulvidraco</i>		+		+	+
<i>Tachysurus nitidus</i>				+	
Siluridae					
<i>Silurus asotus</i>			+	+	
Salmoniformes					
Salangidae					
<i>Neosalanx tangkahkeii</i>					+
<i>Protosalanx chinensis</i>					+
Beloniformes					
Hemiramphidae					
<i>Hyporhamphus intermedius</i>					+
Cyprinodontiformes					
Adrianichthyidae					
<i>Oryzias sinensis</i>	+	+	+		
Poeciliidae					
<i>Gambusia affinis</i>	+	+	+	+	
Synbranchiformes					
Mastacembelidae					
<i>Sinobdella sinensis</i> ^a	+	+	+	+	

Scientific name	Distribution				
	NTR	MTR	STR	METR	LETR
Synbranchidae					
<i>Monopterus albus</i>	+		+		+
Perciformes					
Channidae					
<i>Channa argus</i>	+				+
Gobiidae					
<i>Rhinogobius guirinus</i>	+	+	+	+	+
<i>Rhinogobius cliffordpopei</i> ^a	+	+	+		
<i>Rhinogobius lentiginis</i> ^{a,b}	+	+	+		
<i>Rhinogobius multimaculatus</i> ^{a,b}	+	+			
<i>Rhinogobius sp1</i> ^{a,b}	+	+	+		
<i>Rhinogobius sp2</i> ^{a,b}	+		+		
Odontobutidae					
<i>Micropercops cinctus</i>	+			+	
<i>Odontobutis potamophila</i>	+	+	+	+	
Osphronemidae					
<i>Macropodus ocellatus</i>				+	+
Percichthyidae					
<i>Siniperca chuatsi</i> ^a	+			+	

NTR North Tiaoxi River, MTR Middle Tiaoxi River, STR South Tiaoxi River, METR Middle reach of East Tiaoxi River, LETR Lower reach of East Tiaoxi River

^a Species endemic to China.

^b Species endemic to the Yangtze River Basin.

Table S2. Criteria for river health assessment based on ecological integrity of fish in the East Tiaoxi River.

	Healthy	Fair	Poor	Very poor	Null
Upper reaches	> 46	> 31- 46	> 15-31	≤ 15	0
Middle and	> 36	> 24- 36	> 12-24	≤ 12	0

Table S3. River health condition based on Fish Integrated Biotic Index.

Monitoring	Index	Health	Monitoring site	Index	Health
site	value	condition		value	condition
S1	29	Fair	S11	32	Fair
S2	28	Fair	S12	36	Fair
S3	28	Fair	S28	32	Fair
S4	21	Poor	S29	30	Fair
S5	26	Fair	S34	40	Healthy
S6	-	Null	S35	40	Healthy
S7	29	Fair	S36	34	Fair
S8	27	Fair			
S16	43	Fair	S41	31	Poor
S17	40	Fair	S42	28	Poor
S20	35	Fair	S43	39	Fair
S21	43	Fair	S44	35	Fair
S22	34	Fair	S45	39	Fair
S23	26	Poor	S46	28	Poor
S24	33	Fair	S47	33	Fair
S25	30	Poor	S48	31	Poor
S26	23	Poor	S49	-	Null
S27	22	Poor	S50	16	Poor
S30	33	Fair	S51	22	Poor
S31	25	Poor	S52	24	Poor
S37	19	Poor	S53	28	Poor
S39	28	Poor	S54	19	Poor
S40	24	Poor	S55	23	Poor

Table S4. Matrix of Spearman r_s correlation coefficients of environmental variables.

	S	N	H'	Altitude	Width	Dis.	Velocity	Depth	pH	Temperature	DO	EC	Turbidity	TP	TN	TOC	Chla
S	1.00																
N	0.18	1.00															
H'	0.77**	-0.07	1.00														
Altitude	-0.69**	0.06	-0.56**	1.00													
Width	0.56**	0.10	0.29	-0.77**	1.00												
Dis.	0.51**	-0.09	0.42**	-0.88**	0.78**	1.00											
Velocity	-0.10	-0.23	0.26	0.22	-0.34*	-0.16	1.00										
Depth	0.13	-0.25	0.11	-0.23	0.10	0.11	-0.21	1.00									
pH	0.49**	0.18	0.41**	-0.62**	0.45**	0.47**	-0.10	0.02	1.00								
Temperature	0.17	-0.12	0.31	-0.17	0.08	0.12	0.52**	-0.08	0.28	1.00							
DO	0.19	0.21	0.01	-0.25	0.28	0.25	-0.41**	-0.08	0.29	-0.69**	1.00						
EC	0.44**	0.24	0.30	-0.69**	0.52**	0.72**	-0.22	-0.04	0.61**	0.08	0.28	1.00					
Turbidity	0.36*	-0.09	0.56**	-0.35*	-0.02	0.29	0.24	0.21	0.29	0.23	-0.08	0.39*	1.00				
TP	0.35*	0.10	0.29	-0.23	0.13	0.13	0.15	0.23	0.04	0.18	-0.08	-0.11	0.10	1.00			
TN	-0.03	0.05	-0.25	0.08	-0.08	-0.10	-0.46**	0.04	-0.05	-0.31*	0.10	0.07	-0.28	-0.27	1.00		
TOC	0.22	-0.08	0.29	-0.25	0.10	0.12	-0.21	0.18	0.00	-0.15	0.10	0.03	0.18	0.09	0.01	1.00	
Chla	0.28	0.14	0.20	-0.40*	0.11	0.36*	-0.09	0.03	0.48**	-0.08	0.37*	0.51**	0.46**	-0.07	0.20	-0.01	1.00

Abbreviations: S total number of fish species, N total number of caught, H' Shannon-Weaver index, Dis. Distance to source, DO dissolved oxygen, EC electrical conductivity, TP total phosphorus, TN total nitrogen, TOC total organic carbon, Chla Chlorophyll-a

** Correlation is significant at the 0.01 level.

* Correlation is significant at the 0.05 level.

Table S5. One-way ANOSIM for analysing the impacts of human activities on fish communities.

	A	B	C	D
A				
B	0.338*			
C	0.571*	0.16		
D	0.855*	0.65*	0.331*	

A: residential area; B: residential area & revetment; C: residential area, revetment & farmland; D: residential area, revetment, farmland & factory.

* Correlation is significant at the 0.05 level.